

ABSTRACT OF THE DISCLOSURE

A recognition force microscope for detecting interactions between a probe and a sensed agent on a scanned surface and methods for its operation are provided. The microscope includes a scanning probe having a tip that is sensitive to a property of the scanned surface, and the probe is adapted to oscillate with a low mechanical Q factor. Operation of the microscope includes recording the displacement of the probe tip as a function of time and simultaneously recording both topographic images and the spatial location of interactions between said probe and one or more sensed agents on the surface.